

- Rotch, A. Lawrence.** Die Cirkulation der Atmosphäre in den Tropen und am Äquator. Pp. 251-257.
Rimpau, W. Die Wirkung des Wetters auf die Zuckerrüben-Ernten der Jahre 1891 bis 1900. Pp. 258-260.
 —— Drachenversuche an Bord von Dampfern. Pp. 262-263.
- Physikalische Zeitschrift.** Leipzig. 4 Jahrgang.
Thiel, A. and Abegg, F. Ueber Tropfenbildung bei Bauch. Pp. 129-132.
- Meteorologische Zeitschrift.** Wien. Band 19.
Ekholm, Nils. Ueber Emission und Absorption der Wärme und deren Bedeutung für die Temperatur der Erdoberfläche. P. 489-505.
 —— Hervé Faye. P. 505-506.
 —— Robert Rubenson. P. 506.
- Maurer, J.** Professor Dr. Heinrich v. Wild. P. 506.
Fényi, J. Ueber Luftspiegelungen in Ungarn. Pp. 507-509.
Hann, J. Klima am oberen Schari im französischen Sudan. Pp. 509-512.
 —— Ergebnisse der meteorologischen Beobachtungen zu Guatemala im Jahre 1901. Pp. 512-513.
 —— Zum Klima von Martinique. Pp. 513.
 —— Magnetische Elemente am Observatorium in Valentia. Pp. 513-514.
- Hann, J.** Maxwell Hall über die Temperatur von Kingston Jamaika und deren Beziehungen zur Sonnenfleckperiode. Pp. 514-515.
Hergesell, —. Vorläufiger Bericht über die internationale Ballonfahrt vom 3. April 1902. Pp. 515-516.
Hergesell, —. Vorläufiger Bericht über die internationale Ballonfahrt vom 1. Mai 1902. Pp. 516-517.
Hergesell, —. Vorläufiger Bericht über die internationale Ballonfahrt vom 5. Juni 1902. Pp. 517-518.
Hergesell, —. Vorläufiger Bericht ueber die internationale Ballonfahrt vom 3. Juli 1902. Pp. 518-519.
Hergesell, —. Vorläufiger Bericht über die internationale Ballonfahrt vom 7. August 1902. P. 519.
Hergesell, —. Vorläufiger Bericht über die internationale Ballonfahrt vom 4. September 1902. Pp. 519-520.
- Taudin Chabott, J. J.** Der sogenannte Sonnenuntergang und das optische Verhalten der Atmosphäre nach den jüngsten Ausserungen vulkanischer Thätigkeit in Mittelamerika (mit Tafel). Pp. 520-521.
- Danckelman, V.** Ergebnisse der meteorologischen Beobachtungen in Deutsch-Südwestafrika 1900-1901. Pp. 521-523.
- Polis, P.** Das Gewitter zu Aachen am 30. Juni 1902. Pp. 523-525.
- Laska, W.** Das Wetter und die Telegraphendrähte. Pp. 525-526.
- Bergholz, P.** Klima von Bremen. Pp. 526-527.
 —— Meteorologische Beobachtungen auf Belle Isle 1900-1901. Pp. 527-528.
- Boccara, E.** Ueber die tägliche Variation der atmosphärischen Refraktion. P. 528.
- Birkeland, Kr.** Resultate der magnetischen Untersuchungen der norwegischen Expedition zum Studium der Polarlichter 1899-1900. Pp. 528-530.
- Reimann, —.** Zur Höhe der Gewitterwolken. Pp. 530-531.
- Grundmann, G.** Der Schreiber'sche Nadelkohärer. P. 531.
 —— Harmattan auf der See beobachtet. P. 532.
 —— Meteorologie von Nieder-Kalifornien. P. 532.
 —— Thermische Wirkung der Doppelfenster. P. 532.

CLIMATOLOGICAL DATA FOR JAMAICA.

Through the kindness of H. H. Cousins, chemist to the Government of Jamaica and now in charge of the meteorological service of that island, we have received the following table in advance of the regular monthly weather report for Jamaica:

Comparative table of rainfall for November, 1902.

Divisions.	Relative area.	Number of stations.	Rainfall.		
			Average.	1902.	
	Per cent.		Inches.	Inches.	
Northeastern division	25	21	10.97	9.47	
Northern division	22	47	5.85	2.55	
West-central division	26	21	6.06	6.42	
Southern division	27	32	4.78	3.97	
	100	121	6.91	5.60	

The rainfall was, therefore, below the average for the whole island. The highest fall recorded was 31.27 inches, at Moore Town, in the northeastern division, while 0.30 inch fell at Round Hill, in the northern division.

CLIMATOLOGY OF COSTA RICA.

Communicated by H. PITIER, Director, Physical Geographic Institute.

[For tables see the last page of this REVIEW preceding the charts.]

Notes on the weather.—On the Pacific slope rain was rather scarce, although pretty continuous during the first half of the month. In San Jose the pressure was slightly under the normal; temperature higher; rainfall in deficit for about one-third of the average, with an excess of five days. On the Atlantic coast the rainfall was excessive, while it was deficient, although not scarce, at the stations of the interior at the foot of the Cordillera.

Notes on earthquakes.—November 16, slight shock at 6^h 2^m a. m., direction ENE-WSW, intensity II, duration 3 seconds. November 26, trepidatory movement at 1^h 40^m p. m., intensity III, duration 12 seconds. November 28, 9^h 45^m p. m., slight shock, N-S, intensity IV, duration 7 seconds. (The same day a slight shock was felt at Cachi at 9^h 45^m p. m., same direction).

ANNUAL WIND RESULTANTS.

By T. H. DAVIS, New Haven, Conn., dated February 20, 1902.

I do not believe that mathematical methods, inductive or deductive, will ever bring us to any clear conclusion as to the general circulation of the atmosphere, neither will it do to assume general physical laws as sufficient. The oscillatory movements and the progressive changes of winds can, I firmly believe, only be solved by careful, faithful observations and patient perseverance, and I respectfully submit the following contribution to the numerical method of treatment.

As a basis for a systematic investigation of annual frequencies of wind direction, I have used the directions recorded hourly, as given in full in the successive Annual Reports of the meteorological services of the United States and Canada, for the ten years 1891-1900; twenty-eight stations belong to the United States and six to Canada. From these I have computed the resultant directions, thereby obtaining figures that are as free as possible from the effect of the diurnal variation of the wind. The general method of computation is shown in the example copied in Table 1.

TABLE 1.—*Computation of annual resultant directions from hourly records of winds.*

BISMARCK, N. DAK.

Observed.	N.	E.	S.	W.
Direction.	Number.			
N.....	852	852	.....	.....
NE.....	677	479	479	.....
E.....	1,266	.....	1,266	.....
SE.....	1,060	.....	749	749
S.....	530	.....	530	.....
SW.....	377	.....	267	267
W.....	768	.....	.....	768
NW.....	3,033	2,149	.....	2,144
Totals	8,563*	3,475	2,494	1,546
	.....	1,546	.....	.....
Surplus .....	.....	1,929	.....	685
			Resultant.....	N. 21° W.

*The difference between this number and the 8,760 hourly observations is due to calms and missing records.

All the resultants thus computed for each of the years 1891-1900 are given in Table 2. It will be noticed that instead of reckoning directions uniformly from the north point eastward around the circle I have started from either one of the four cardinal points, north, south, east, or west, as seemed most appropriate in each case. In general it will be seen that westerly winds have prevailed during this decade at all stations, except those in the region extending from Salt Lake City and Kansas